**Topics in Geriatrics: Rhabdomyolysis**  
  
 The purpose of this article is to describe rhabdomyolysis and its significance in the geriatric population.

**Objectives:**

1. Describe the definition of rhabdomyolysis and give an overview of the disease
2. Describe the etiology, pathology, signs/symptoms, and risk factors of the disease
3. Describe diagnosis, treatment, and physical therapy implications
4. Provide resources for continued reading

**Definition:**

Rhabdomyolysis is a disease that results from the release of muscle breakdown products into the blood due to traumatic muscle injury. The increased amount of breakdown products in the blood can lead to renal failure.

Muscle injury may be due to extreme physical exertion, traumatic bodily injury due to an accident, or as a side effect of medication or drugs.

**Etiology**

When muscle is broken down, protein and potassium is released into the blood stream. The myoglobin protein is filtered through the kidneys. Excess amounts of myoglobin can overload the kidneys and lead to renal failure. Increased amounts of potassium in the blood can lead to hyperkalemia. Rhabdomyolysis can cause calcium to accumulate in the muscles leading to hypercalcemia.

**Causes**

**Medication/drugs**: drugs account for a majority of cases. The most common drugs are:

* **Statins: may occur within a few weeks of starting the drug.** Risk factors for this particular effect include age over 80, small body frame or frail health, presence of kidney disease, and polypharmacy.
* Alcohol
* Barbiturates, benzodiazepines, and other sedatives and hypnotics  
   Cocaine  
   Heroin  
   Ecstasy

**Falls**

Older individuals who fall and remain on the floor for several hours are at an increased risk of developing rhabdomyolysis.

**Muscle overexertion**

Individuals with lower fitness levels are at an increased risk of muscle breakdown.

**Post-operative**

Surgery can increase one’s risk of developing this disease. Risk factors include surgical time over 4 hours, increased bodyweight, intravascular volume depletion, and hypertension.

**Temperature extremes**

Older adults cannot regulate body temperature as well as younger individuals and are at a greater risk in prolonged exposure to heat or cold.

**Infection**

Streptococcus, staphylococcus and salmonella

**Signs/symptoms**

Most common: muscle pain, weakness, and dark urine

Others: Swollen muscles, delirium, confusion, nausea, vomiting, hypotenson, fatigue, and fever.

Muscles most commonly affected are calves and low back.

**Diagnosis and Treatment**

Creatine Kinase (most sensitive indicator): Normal: 45-260 U/L. In rhabdomyolysis, CK levels can increase to 10,000-200,000 U/L, and as high as 3,000,000,000 U/L.  No other disease can cause this level of Creatine Kinase.

Myoglobin: elevated values seen in the beginning of disease but can decrease as myoglobin is filtered through kidneys

Urinanlysis

BUN:creatinine ratio typically 6:1, normal is 10:1

**Treatment:**

Begin antibiotics if condition is caused by infection.

Monitor vitals, lab values, cardiac status, and electrolyte levels.

Begin vigorous fluid administration to clear toxins from blood and renal system: 10 or more liters of fluid per day.

Medication: mannitol and bicarbonate.

Dialysis may be indicated depending on severity of disease

**Physical Therapy Implications/Management**

Chart review: condition may be due to bodily trauma; pt may have other musculoskeletal injuries to consider

Assess for balance and fall risk using measures like the Berg Balance Assessment, Time Up and Go, gait velocity, or BESTest

Monitor vitals during exercise

Monitor for signs of congestive heart failure and pulmonary edema due to large amount of fluid being administered

Monitor for signs of hyperkalemia and hypercalcemia which can increase risk of cardiac arrhythmia, muscle contraction, and seizures

Ensure patient is drinking prescribed amount of fluid

Pt may be on dialysis which can affect scheduling and therapy times

Teach patient strategies for getting off floor after a fall

**Additional Resources**

<https://www.merckmanuals.com/professional/geriatrics/falls-in-the-elderly/falls-in-the-elderly>

http://orthoinfo.aaos.org/topic.cfm?topic=a00135

<https://www.nlm.nih.gov/medlineplus/ency/article/000473.htm>

http://www.mayoclinic.org/rhabdomyolysis/expert-answers/faq-20057817

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